WHAT IS CLAIMED IS:

1. A three-shift lifting mechanism comprising:

a hydraulic device, said hydraulic device comprising a cylindrical casing, a barrel, a lifting tube, and a small center tube, said casing being a double open end cylinder, said barrel being a double open end member axially inserted into the inside of said casing and defining with said casing an oil accumulation chamber in between said casing and said barrel, said lifting tube being an one open side tube axially mounted in said barrel and forwardly extended out of said casing and adapted to lift the weights, said lifting tube having an axial center hole axially extended to a rear open side thereof, a piston ring disposed at the periphery thereof near the rear open side and pressed on an inside wall of said barrel, and a high-pressure oil chamber defined within said barrel behind said piston ring, said small center tube being a double open side tube inserted into the axial center hole inside said lifting tube and defining therein a rapid-lifting oil chamber;

a piston pump adapted to pump hydraulic oil into said hydraulic device to lift said lifting tube, said piston pump comprising a housing and a plunge axially slidably mounted in said housing, said housing being a hollow cylindrical member having at least one oil hole cut through the periphery thereof in communication with the inside space thereof, said plunger comprising a piston of relatively bigger diameter disposed at a front side inside said housing and a piston rod of relatively

smaller diameter disposed at a rear side and extended out of said housing, said piston having a plurality of annular flanges extended around the periphery thereof and pressed on an inside wall of said housing and defining the inside space of said housing into a front working chamber and a rear buffer chamber, said piston having an oil hole axially backwardly extended from the center of a front side thereof and then turned sideways to the periphery thereof in communication between said front working chamber said rear buffer chamber, and an one-way valve means formed of a spring member and a steel ball and mounted in the oil hole of said piston to control one-way flowing of hydraulic oil from said rear buffer chamber to said front working chamber; and

a valve block adapted to accommodate said hydraulic device and said piston pump, said valve block comprising a front coupling flange fitted into a rear open side of said cylindrical casing, a recessed portion disposed at the center of said front coupling flange and adapted to accommodate said barrel and said small center tube, a rear receiving hole adapted to accommodate said piston pump and to block said front working chamber, a first oil passage extended from said oil accumulation chamber to said front working chamber, a second oil passage extended from said front working chamber to said high-pressure oil chamber and said rapid-lifting oil chamber, a third oil passage extended from said oil accumulation chamber to said high-pressure oil chamber, a fourth oil passage extended from said oil accumulation

chamber to said rear buffer chamber, a fifth oil passage shunted from said second oil passage and extended to said rear buffer chamber, a sixth oil passage extended from said rapid-lifting oil chamber to said oil accumulation chamber, and a seventh oil passage extended from said high-pressure oil chamber to said oil accumulation chamber.

2. The three-shift lifting mechanism 1, wherein said first oil passage is formed of a first transverse oil hole, an oil hole extended from a bottom end of said first transverse oil hole to said rear receiving hole, a stepped first longitudinal oil hole extended across said first transverse oil hole, an oil hole extended from a bottom end of said stepped first longitudinal oil hole to a front side of said valve block in communication with said oil accumulation chamber, and an one-way valve formed of a steel ball and mounted in said stepped first longitudinal oil hole and stopped between the oil hole oil hole, which extends from said first transverse oil hole to said rear receiving hole, and the oil hole, which extends from said stepped first longitudinal oil hole to said oil accumulation chamber.

3. The three-shift lifting mechanism as claimed in claim 1, wherein said second oil passage is formed of a second transverse oil hole in fluid communication with said first longitudinal oil hole, an oil hole extended from said second transverse oil hole to said rapid-lifting oil chamber, a second longitudinal oil hole extended across said second transverse oil hole, a steel ball mounted in said second longitudinal oil

hole and working as an one-way valve means, a pressure regulator disposed at a top end of said second longitudinal oil hole, an oil hole extended from said second longitudinal oil hole to said high-pressure oil chamber, a steel ball mounted in said first longitudinal oil hole between said first transverse oil hole and said second transverse hole and working as one-way valve means.

4. The three-shift lifting mechanism as claimed in claim 1, wherein said third oil passage comprises a curved oil hole extended from a front side of said front coupling flange of said valve block to said recessed portion, a steel ball mounted in said curved oil hole and working as one-way valve means.

5. The three-shift lifting mechanism as claimed in claim 2, wherein said fourth oil passage comprises an oil hole shunted from said first longitudinal oil hole below the steel ball in said first longitudinal oil hole, a third longitudinal oil hole disposed inside said valve block and across the oil hole shunted from said first longitudinal oil hole, an oil hole extended from said third longitudinal oil hole to said rear receiving hole, and a steel ball mounted in said third longitudinal oil hole and working as one-way valve means.

6. The three-shift lifting mechanism as claimed in claim 2, wherein said fifth oil passage is formed of a fourth longitudinal oil hole in fluid communication with said first transverse oil hole, a steel ball mounted in said fourth longitudinal oil hole and working as one-way valve means, a pressure regulator mounted in said fourth longitudinal oil hole

above the steel ball in said fourth longitudinal oil hole, and an oil hole in fluid communication between said fourth longitudinal oil hole and said third longitudinal oil hole.

7. The three-shift lifting mechanism as claimed in claim 1, wherein said sixth oil passage is formed of an oil hole disposed at said recessed portion of said valve block, a steel ball mounted in the oil hole at said recessed portion and working as one-way valve means for enabling hydraulic oil to pass from said rapid-lifting oil chamber to said oil accumulation chamber, a pressure regulator mounted in the oil hole of said sixth oil passage above the corresponding steel ball, an oil hole in fluid communication with the oil hole at said recessed portion and said oil accumulation chamber.

8. The three-shift lifting mechanism as claimed in claim 1, wherein said seventh oil passage is an oil hole having one-way valve means mounted therein to control the flowing direction of hydraulic oil, for enabling hydraulic oil to flow backwards from said high-pressure oil chamber to said oil accumulation chamber via said seventh oil passage upon return stroke of said lifting tube.